NUCLEAR INSPECTION AND ACCEPTANCE PROCEDURES COMPACTION OF EARTHWORK WITH MOISTURE AND DENSITY

(General Rewrite)

GENERAL

On selected grading projects, as designated by the engineer, acceptance testing will be performed on each compaction section of each lift as soon as practicable after the contractor notifies the inspector that the section is ready for testing. A compaction section is defined as the lineal length of a lift of relatively uniform soil being placed, which received continuous compaction until density is achieved.

NUCLEAR MOISTURE AND DENSITY TESTING

Each section shall be divided into approximately five equal subsections. A random spot in each subsection shall be selected for a nuclear moisture and density test in accordance with I.M. 334 as modified by this instruction, and the recorded steps on Form #1258. Correction factors for nuclear moisture measurements shall be established or verified in accordance with I.M. 334.

ACCEPTANCE OF A COMPACTION SECTION

If all the subsection test results are at or above the specified density, the section is acceptable. If any of the subsection test results are less than the specified density, the following procedures shall be used for determining acceptability:

Add the five density test results and divide by five to get the average (X) density.

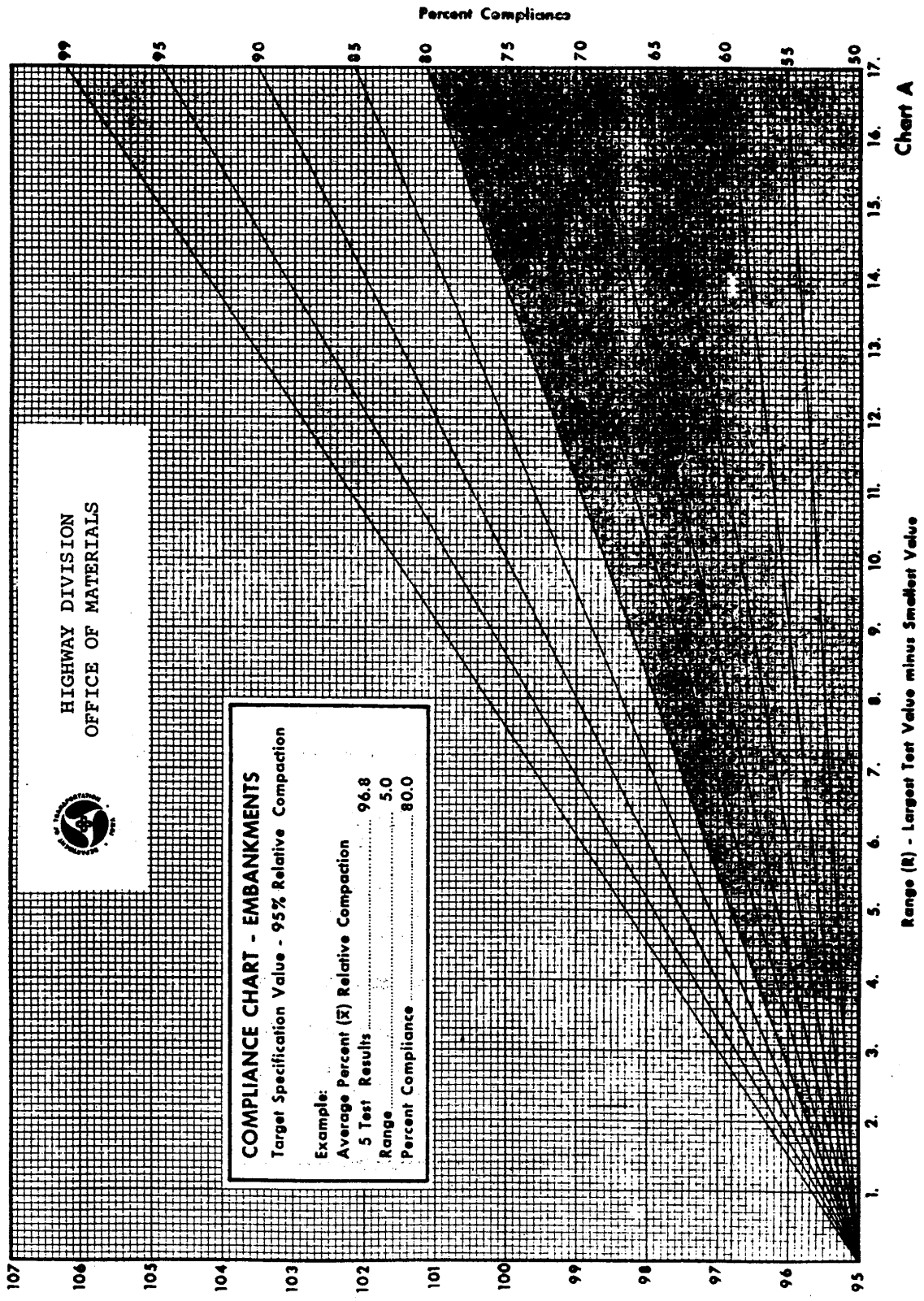
Determine the range (R) of test results by subtracting the lowest value from the highest value.

Determine the percent of compliance with the specified target density by use of Chart A or B (attached). Each chart has an illustrative example.

A section is considered to be in reasonable conformance when the percent of compliance with the specified target density is 80% or greater. Sections with less than 80% compliance shall continue to be compacted or reworked, or both, until 80% is achieved.

The same procedures outlined for the initial testing shall be followed in detail when retesting is required.

The frequency of testing may be reduced from five tests to one test for determining acceptability of compaction on irregular or short sections, such as beams, short road intersections, etc., which are 150 meters (500 feet) or less in length.


Percent Compliance
99
95
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85
80
75
70
65
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50
107
106
105
104
103
102
101
100
99
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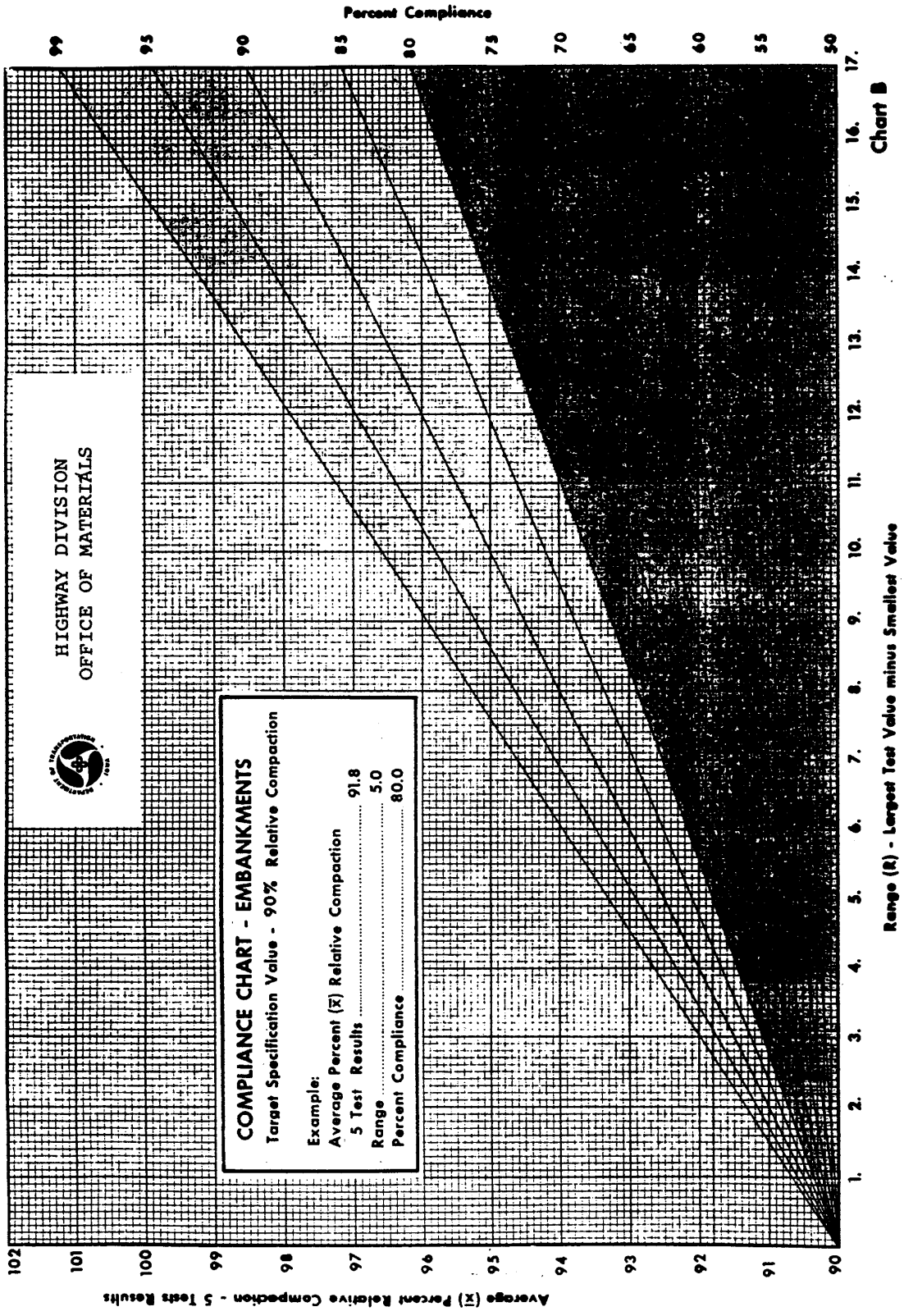
17.
Range (R) - Largest Test Value minus Smallest Value
Chart A
HIGHWAY DIVISION
OFFICE OF MATERIALS
COMPLIANCE CHART - EMBANKMENTS
Target Specification Value - 95% Relative Compaction
Example:
Average Percent ($\bar{x}$) Relative Compaction 96.8
5 Test Results
Range 5.0
Percent Compliance 80.0


Percent Compliance
99
95
90
85
80
75
70
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17.
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2.
1.
Chart B
Range (R) - Largest Test Value minus Smallest Value
Average (x̄) Percent Relative Compaction - 5 Tests Results
102
101
100
99
98
97
96
95
94
93
92
91
90
HIGHWAY DIVISION
OFFICE OF MATERIALS
COMPLIANCE CHART - EMBANKMENTS
Target Specification Value - 90% Relative Compaction
Example:
Average Percent (x̄) Relative Compaction
5 Test Results 91.8
Range 5.0
Percent Compliance 80.0